1967

Use of the weighted application blank in hiring unskilled labor.

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USE OF THE WEIGHTED APPLICATION BLANK IN HIRING UNSKILLED LABOR

A Thesis Presented

By

Richard Dorr Scott

Submitted to the Graduate School of the
University of Massachusetts in
partial fulfillment of the requirements for the degree of
Master of Science

_____ _____
(Month) (Year)

Major Subject_____

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ACKNOWLEDGMENT

I wish to sincerely thank the members of my Master's Thesis Committee. They included Dr. Richard Johnson who as chairman gave unselfishly of his time and effort; Dr. Stanley Moss whose invaluable suggestions did much to implement this thesis and Dr. Alfred Southworth for his much appreciated advice.

I wish to further thank the manager of the Oxford Pickle Company of South Deerfield, Massachusetts, David Orloff without whose assistance this work could have never been attempted.

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The continuing importance of selection and placement decisions to individuals, employers, and society is emphasized when we are reminded that millions of job changes take place every year at a cost to industry of many billions of dollars. As a result of this problem, tremendous effort and research have been put forth in finding new and better methods of selecting and evaluating employees, with considerable progress being made within the last few years. England (1961) cites such developments as psychological testing, standardization of the interview and quantification of application blank information as being partly responsible for this improvement in selection procedures.

In evaluating these advancements, England feels two major characteristics stand out. First, he feels that standarization of selection precedures has greatly improved their efficiency, with the establishment of uniform conditions for their administration and interpretation. And secondly, selection methods have become more effective as researchers have been able to express them in numerical terms (quantification). The development of weighted application blanks (WAB) has relied upon these two marks of progress; standardization and quantification).

The history of grading biographical items on application blanks stretches back to the early 1920's when some of the larger insurance companies used this technique in selecting men for their sales positions (Goldsmith, 1922; Russell & Cops, 1925). Although similar studies were carried out in the

1930's and 1940's, it was apparently not until the 1950's that actual weights or scores were assigned to the personal items in order to maximize their predictive efficiency (Kreidt & Gadel, 1953; Kirchener & Dunnette, 1957).

Considering the large number of application forms used in business today, it is surprising that this technique has not been more widely used. The usual practice, however, has been for the personnel interviewer to merely scan the blank of items he considers pertinent or else only to use the information in the application blank as a point of departure for the employment interview. As a result, much of the wealth of information in the application form is going to waste, or worse, is often improperly used. In contrast, several studies (Fleishman, 1960; Mosel & Wade, 1951; and Kirchener & Dunnette, 1957) have shown that the WAB technique, properly validated and used, provides a systematic and unbiased procedure for evaluating this same information.

The rationale behind the development of the WAB is that certain biographical factors such as age, years of education, and marital status often are closely correlated with length of service on a job and the degree of effectiveness realized in the performance of the job. For example, the fact that an applicant has held a similar job indicates the likelihood of his transfering some of his training to the new job. Or similarly, what an applicant has done successfully before is likely to reflect his basic interests and satisfactions. By determing the predictive power of each application blank

item, it is possible to determine numerical weights or scores to each possible answer and obtain a minimum score, which, if used at the time of hiring will eliminate the maximum number of undesirable candidates and at the same time, allow minumum loss of desirable candidates. Thus the WAB technique is a systematic way of determinating which factors of a person's background are related to success in different occupations.

The major emphasis of the literature involving the WAB technique has been focused on job productivity (Kerr & Martin, 1949; Mosel, 1952; Scolay, 1956; and Soar, 1956). Paralleling this interest in worker efficiency, but to a lesser extent, has been research involving the prediction of job turnover. It seems justifiable that industry should be concerned with turnover in view of the initial investment which the company must make in recruiting and training the new employee. Whether the training is formal or otherwise there is invariably a minimum time period before which the new employee can compensate for the initial cost of training.

A great majority of the studies concerned with minimizing turnover have dealt with clerical employees. Kreidt and Gadel (1953) found, for example, that the best predictor of clerical turnover was a biographical data scored on a weighted basis. Minor (1958) found a correlation of .51 between fifteen personal items and job tenure on a cross validation group of clerical workers in a large midwestern insurance company. Mosel and Wade (1951) used a weighted

application blank to reduce turnover among department sales clerks. A study by Fleishman and Berniger (1960) found a correlation of .57 between personal factors and job tenure on a cross validation group of women clerical workers in a university setting. Kirchener and Dunnette (1957) extended the use of the WAB to a variety of office jobs (clerical, stenographic, secretarial, and personal contact), instead of limiting it to one specific job as had usually been the case. England (1961) in a survey of several of these studies, found certain personal items commonly associated with clerical turnover. These items included, age, location of residence, and tenure on previous jobs. Thus it seems that at least with women clerical employees the use of the WAB technique is a very effective procedure.

Another labor source, which traditionally has had large job turnover problems has been the blue collar workers. There seems to be little evidence, however, of attempts to minimize this problem by the use of the weighted application blank, and in the instances where investigations have been carried out they usually have involved skilled or semi-skilled laborers. For example, one study dealing with semi-skilled optical workers found that the ideal long term applicant was at least 30 years old, married, claimed one or more dependents and had not finished ten years of formal schooling (Tiffen, Parker, & Habersat, 1947). In another investigation involving skilled and semi-skilled employees in an automobile factory, Scholl and Bellows (1952) were

also able to reduce turnover by analysis of application blank information.

The type of production worker who is most vulnerable to job turnover, however, is the unskilled laborer. Since he has no job training and in most cases is resolved to do some kind of menial task, it is not surprising that he goes from one job to another at a rather rapid rate. Thus it would seem that knowledge of the personal characteristics of stable unskilled laborers, which the WAB provides, would be invaluable; yet there has been very little research done with this problem. One study which has made an attempt was carried out by Dunnette and Maetzold (1955), as they made use of the WAB in hiring seasonal employees in a canning factory. This short term help consisted of housewives, high school and college students, transients and migratory workers, who were all hired for four months during the summer. The investigators found, by use of the WAB, that such personal factors as residence, marital status, education, size, age and availability were important in discriminating between those workers who stayed the four months and those who did not. From these findings Dunnette and Maetzold concluded that the WAB technique was useful in predicting job turnover for unskilled labor. Secondly, they concluded that the WAB could be applied to a variety of blue collar jobs, i.e., there were several different jobs performed by the unskilled laborers in the canning factory

where the investigation took place.

The major drawback to these conclusions seems to be that the working force was rather atypical. Tuue enough, these employees were doing unskilled labor but the majority of them did this work only four months a year and the rest of the time they were in their homes or schools. The only workers who could be really classified as full-time unskilled laborers were transients and migratory workers, and their information was not separated from the others. It seemed appropriate therefore, in terms of lending support to the above conclusions, that a study be done similar to Dunnette and Maetzold's, but only including unskilled laborers who were hired as full-time employees. The present investigation was conducted to discover whether or not the weighted application technique might be of value with this type of population.

THE PROBLEM

The Oxford Pickle Company is a small canning factory which specializes in pickles and relishes. For some time they have been having a large turnover problem with their unskilled labor. Several times during this past year they were not able to meet production orders, losing thousands of dollars, on account of this problem. This study deals with the possibility of improving their condition by the development of a weighted application blank, the weights being selected in such a way as to eliminate the maximum number of short tenure candidates and, at the same time, a minimum of potentially stable workers.

METHOD

The Sample

The sample of the study consisted of 150 unskilled employees of the Oxford Pickle Company (past and present), who filled out application blanks in the past four years. One half of this sample represented the short tenure group; employees who had worked for one month or less, while the other half of the sample represented the long tenure group; employees who had worked for six months or more. The justification for the short tenure cut-off resulted from a plotting of a sample of 100 terminees which revealed a very high rate of termination within the first month. On the other hand, management felt that employees who had worked at least six months, were much less likely to leave their jobs after that period.

Several restrictions were imposed on the otherwise random Sampling. First, only employees who had given adequate information on their application blank were used in the study since most of the personal data on the application form would be used in comparisons with the other employees. Secondly, all part-time and seasonal workers were eliminated as it was the purpose of the study to look only at full-time unskilled laborers. And finally, the labor force investigated included only those employees doing unskilled blue collar jobs, such as the cleaning and bottling of pickles.

Appraisal Instrument

The WAB is a systematic method for determinating which personal factors are important in differentiating between "success" and "failure" in the selection of employees. In this study there were 19 personal items employed, all of which were biographical items self-reported by the employee on the standard application form (see Appendix A) at the time of hiring. The variables were as follows: age at the time of application, height, weight, number of years of education, address at the time of application, marital status, type of residence, telephone, number of dependents, type of work previously done, number of children, years lived in state, years lived in county, tenure on last job, rehire or first time worked for the company, and number of personal references.

Procedure

The two criterion groups of 75 each, representing the long and short tenure employees were each randomly broken down into a weighting group and a holdout group with the weighting group being twice the size of the holdout group. The weighting groups were used to identify and weight personal history items, while the holdout (or cross validation) group were used in evaluating the effectiveness of the WAB.

Names and item responses from all the persons in the weighting groups were recorded, with the long and short tenure groups separated. Each item response was then broken

down into several categories, (e.g. age: under 20; 21-30; 31-40; 40-50; and over 50), with the number of persons in each category being converted to a percentage. Thus it became possible to compare the short tenure employees with the long tenure employees on each response category. Differences in these percentages were calculated and net weights secured from the appropriate part of three tables developed by E. K. Strong, Jr. (Appendix B). Net weights, however, in many instances were large and cumbersome to work with so according to the procedure recommended by England (1961), these weights were converted to assigned weights with smaller positive values to simplify scoring (Appendix C).

Personal items which turned out to have the same assigned weight for every response category were discarded. The individuals total score on the weighted application blank was found by adding assigned weights for his or her responses to the differentiating items.

All individuals in this holdout groups were scored on the responses to the personal history items which were found to differentiate between the two weighting groups. From these total scores a cut-off score between desirable and undesirable employees was established by the "method of maximum differentation". In other words, the percentage of employees reaching or exceeding each score point on the total score range was tabulated. Then the difference between the percentages obtained by the two groups at each score point was calculated giving the point of greatest differentiation.

Thus all applicants scoring above this point would be considered potential stable employees, while those scoring below the cutoff score would be short tenure risks.

In order to obtain a measure of how wellthe WAB technique predicted tenure, a correlation was made between the employees' total scores and their length of employment (in months).

Since the WAB technique does not take into account intercorrelations between the discriminating variables, an alternative procedure of weighting the items based upon the application of multiple regression technique was also used (program BMDC2R of the Biomed computer series, Dixon 1965).

Pearson product-moment and point biserial correlations were computed among the discriminating variables, with the resultant matrix being factor analyzed by the principal component method (program BMDO3M of the Biomed computer series, Dixon 1965). The purpose of the factor analysie was to better describe the variables associated with long and short tenure.

RESULTS

Response categories of 12 of the 19 biographical items were found to differentiate between long and short term employees. (The raw data may be found in Appendix D). These included age at the time of application, sex, education, address, marital status, residence, number of dependents, number of children, years lived in the state, years lived in the county, tenure on last job and reason for leaving prior job. Table 1 includes these differentiating items, with their response categories, assigned weights and net weights. Response categories having an assigned weight of two indicate desirable characteristics of the applicants, those with an assigned weight of one do not differentiate between long and short term employees, and response categories with an assigned weight of zero are unfavorable to the applicant.

In terms of these scoring weights, the typically stable unskilled employee is between 40 and 50 years old: is female; has 12 years of education; is married; lives in his or her own home; lives within 5 miles of work; claims 1 dependent, has 2 or more children; has worked two years or more on last job and left this job for other reasons than going back to school. Conversely, the short term employee is under 20 years of age; is male; has more than 12 years of education; is single; lives 5-10 miles from work; lives with parents or in a room; has no dependents or children; has lived in the state or county for less than 5 years or else from 16-20

TABLE 1

Differential Weights Assigned to the Various Biographical Items

Biographical Item	Net Weight	Assigned Weight
Age		
Under 20	-6	0
21-30	1	1
31-40	-1	1
40-50	6	2
Over 50	3	1
Sex		
Male	-4	0
Female	4	2
Education		
8th or less	-2	1
9	-2	2
10	0	1
11	1	1
12	8	2
More than 12	-5	0
No answer	3	1
Marital Status		
Single	-8	0
Married	10	2
Divorced	-3	1
Widow (er)	-2	1
(Address) Distance from factory		
5 miles	4	2
5 - 10 miles	-4	0
10-20 miles	-1	1
20 or more miles	1	1
Residence		
Own home	14	2
Live with Parents	-6	0
Room	-7	0

(Table continued on next page)

Biographical Item	Net Weight	Assigned Weight
Dependents		
None	-6	0
One	4	2
Two or more	3	1
Tenure on last job		
6 mo. or less	-6	0
7 mo. - 1 year	-2	1
1 year - 2 years	1	1
More than two years	7	2
No answer	2	1
Number of children		
None	2	1
One	0	1
Two or more	-4	2
No answer	-3	1
Can't respond	1	1
Lenght of time lived in state		
5 years or less	-4	0
6 yr. - 10 yrs.	0	1
11 yr - 15 yrs.	-2	2
16 yr - 20 yrs.	-4	0
Over 20 yrs.	3	1
No Answer	4	2
Lenght of time lived in county		
5 years or less	-6	0
6 yr - 10 yrs.	2	1
11 yr. - 15 yrs.	-3	1
16 yr. - 20 yrs.	-4	0
Over 20 years	3	1
No Answer	4	2
Reason for leaving last job		
lay-off	0	1
School	-4	0
Quit	-3	1
Sold out	1	1
Other	0	1
No Answer	4	2

years; has worked for less than 6 months on last job and quit this job to go back to school.

Table 2 shows means and standard deviations of these 12 variables, plus the criterion variable. Also included in the table are the codes for the discontinuous variables which were dichotomized for further statistical computation. These included: sex (male vs. female); marital status (single vs. married); type of residence (living with parents or renting a room vs. owning a home) and reason for leaving last job (school vs. all others).

Table 3 presents product-moment or point-biserial correlations between each of the discriminating variables and length of tenure (in months). As may be noted, age, marital status, type of residence, address and length of tenure on last job relate highest with length of employment. These correlations further substantiate the previous description of the long term employee as older, married, living in his own home, and possessing a local address. It must be pointed out, however, that some of these estimates of correlation may not be true estimates, since a few of the discriminating variables (e.g. address, years lived in state), have a non-linear relationship with the criterion. Linear relationships were assumed, however, for use in the factor analysis study of the data.

TABLE 2

Means and Standard Deviations of the Variables

Variable	Means	Standard Deviations
Age	28.66	11.88
Sex 0=Male 1=Female	.34	.47
Education	10.58	2.84
Distance from factory	7.84	4.24
Marital Status 0=single, divorced or widow (er) 1= Married	.53	.50
Type of Residence 0=Live with parents: room 1=Own home	.52	.50
Number of Dependents	.96	1.44
Number of Children	.66	1.09
Years lived in State	17.81	14.98
Years lived in County	15.35	15.25
Tenure on last job	2.05	3.42
Reason for leaving last job 0=School 1=Other	.95	.21
Tenure on Present Job	11.25 (mo.)	1.55 (mo.)

TABLE 3

Product Moment or Point Biserial Correlations
Between Discriminating Variables and Job Tenure

Variable	Product-Moment	Point-Biserial
Age	.44	
Sex		.23
Education	-.04	
Distance from factory	-.31	
Marital Status		.30
Type of Residence		.42
Number of Dependents	.21	
Number of Children	.27	
Years lived in State	.09	
Years lived in County	.16	
Years of Tenure on last job	.32	
Reason for leaving last job		.11

Further evidence of the difference between long and short term employees is illustrated in Table 4, where total scores for the two groups of employees in the weighting group have been compiled into quartiles and means. Long tenure employees received considerably higher scores on the average than did short term workers. The difference between the mean scores is highly significant ($t=6.41; p<.01$). In terms of overlap, only 20 percent of the short term group equal or exceed the median score of the long term group (10 out of 50 cases). However, this in itself, is not conclusive since the weighting group was used in selecting the items.

Table 5 presents impressive evidence that the same variables also differentiate effectively between long and short tenure laborers in the holdout group. It can be seen that there was occurred very little regression toward the total group mean, and in terms of overlap, only 16 percent (4 out of 25 cases) of the short term group equal or exceed the median score of the long term group. Results for this group then are highly similar to those of the original group ($t-3.93; p<.01$).

When length of service (in months) and weighted application blank score for each individual were correlated for the holdout group, a product-moment r of .45 ($p<.01$) was obtained. The magnitude of this r compares favorably with the validity coefficients obtained in other studies using the WAB (England, 1961, Part 4).

TABLE 4

Quartiles and Means of Weighted Scores for Long-Term and Short-Term Employes of original group

Group	Q_1	Median	Q_3	Mean	SD	N
Short	5	8	12	8.24	3.99	50
Long	10	13	17	13.50	4.25	50

TABLE 5

Quartiles and Means of Weighted Scores for Long-Term and Short-Term Employers of Holdout group

Group	Q_1	Median	Q_3	Mean	SD	N
Short	5	8	12.5	9.32	4.42	25
Long	11	14.5	16	13.88	3.85	25

A cut-off score to discriminate between which employees were to be hired and which ones were not was established by the method of maximum differentiation. The result is shown in table 6, from which it will be seen that the difference between the two groups reached its maximum at a score of 14. This indicates that applicants scoring 14 points or more were more likely to stay on the job 6 months or longer, whereas those scoring less than 14 could be considered potential short tenure employees.

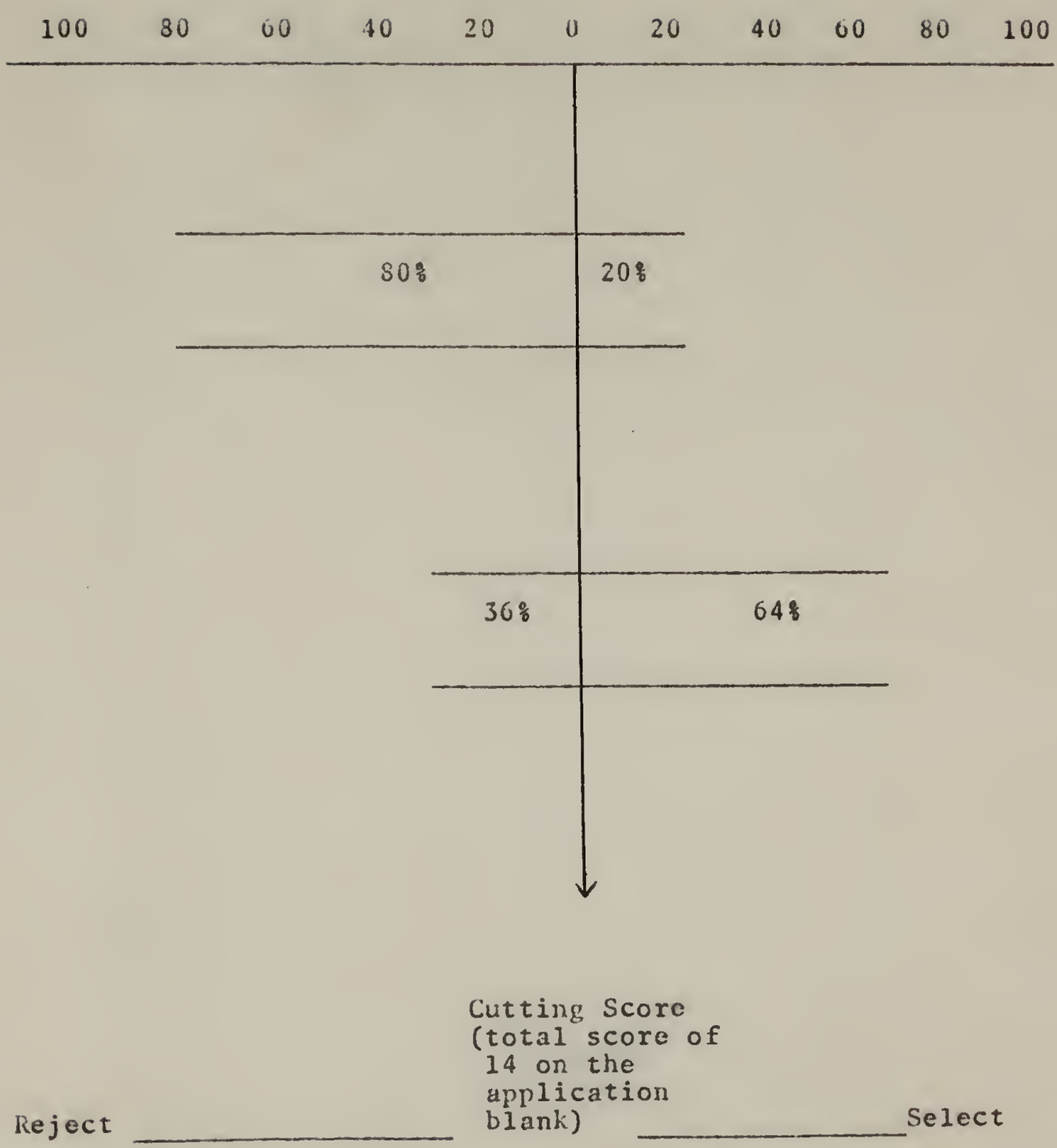
Figure 1 shows the degree of success achieved when a cutting score of 14 was used on the holdout group of 50 employees. The shaded areas represent the percentage of correct hiring decisions; the unshaded areas represent the "misses". As may be seen, the results of the short tenure group indicate that 80 percent of the unstable employees would have been eliminated, while 64 percent of the long term employees would have been hired. In all, there were 72 percent correct classifications in the total group of holdout employees. This percentage of total "hits" is significantly different from chance (50:50 split) at the .01 level of probability (C.R.=3.10).

TABLE 6

Percentage of Subjects Above and Below the Cutoff Score

	Percent of Subjects at or above a given point	
	A	B
Total Score	Long-Tenure Employees	Short-Term Employees
20	4	0
19	8	4
18	20	4
17	24	8
16	40	8
15	52	16
14	64 Cut-Off	20
13	64	28
12	72	32
11	80	44
10	84	44
9	92	48
8	96	56
7	96	64
6	96	72
5	96	84
4	96	100
3	100	100
2	100	100
1	100	100

Figure 1


100 80 60 40 20 0 20 40 60 80 100
80%
20%
36%
64%
Cutting Score (total score of 14 on the application blank)
Reject
Select

In reviewing the above evidence it should be noted that the weighted scores do not account for any correlation that might exist among the 12 discriminating variables. The weights assigned to each item are determined independently from the other items on the application form.

To find out if the intercorrelation between these biographical items would change the assigned weights, an alternative procedure of weighting the items based upon the application of multiple regression technique was used. Table 7 presents the multiple correlations between the discriminating variables and the criterion. The predictor variables are listed in order of their relative weight in contributing to the multiple R.

Scores for members of the holdout group on the first six variables were entered into the multiple regression equation given below:

Y'=.30(Age)+8.82(Sex)-.69(Address)+5.29(Type of residence) +2.66(Number of children)+1.08(Tenure on last job)-1.99.

Only the first 6 variables were used as the gain in the size of the multiple R (.69 to .71) was very slight beyond this point.

When the scores of the holdout group were correlated with job tenure, a correlation of .31 ($p < .05$) between predicted job tenure and actual job tenure was obtained. The size of this r, although lower than the r obtained between the WAB and job tenure, did not prove to be significantly less than

TABLE 7

Successive Multiple Correlations Between Various Predictor Variables and Tenure

Predictor	Multiple R[a]	Standard Error of Estimate
Age	.51	13.66
Address	.57	13.05
Type of Residence	.62	12.57
Sex	.64	12.32
Tenure on last job	.67	11.92
Number of Children	.69	11.71
Marital Status	.70	11.58
Reason for quitting last job	.71	11.60
Education	.71	11.63
Years lived in County	.71	11.69
Years lived in State	.71	11.69
Number of Dependents	.71	11.74

[a]Each successive multiple R is based upon the one new predictor vairable plus all the Preceeding Predicting Variables.

the later (based ppon the r to z transformation; C.R.=.83; $p > .05$). However it was surprisingly low considering the greater mathematical sophistication involved in arriving at the weights (multiple regression equation) employed. Several factors may have restricted the effectiveness of this technique: (a) the relatively high intercorrelation of the predicator variables; (b) the use of a fairly large number of predictor variables (initially 19) with a relatively small N; and (c) the non-linear relationship known to exist between a few of the variables and the criterion.

To determine if there were any common factors underlying the 12 discriminating variables which predicted tenure, a principal component factor analysis (Fruchter, 1954) was run. Table 8 presents the intercorrelation matrix of the 12 discriminating variables, while Table 9 shows the matrix of factor loadings rotated in accordance with Thurstone's criterion of simple structure. The factor was rotated so that as few factors as possible would account for the variation in the criterion variable "tenure on this job"). From this rotation two meaningful factors emerged, these being arbitrarily called "lack of responsibility" and "sexual mobility". The factor labeled lack of responsibility includes significant factor loadings ($p < .05$) on age, marital status, type of residence, number of dependents, length of employment of last job, and tenure on present job, and indicates that a short term employee will be young, unmarried, living with his

Table 8

Intercorrelation Matrix of 12
Discriminating Variables

	Age	Sex	Educ.	Add.	MS	Type of Res.	No. of Dep.	No. of Child.	Yrs. Lived State	Yrs. Lv. Cty.	Ten. Last Job	Why Left Job
Age		-.01	-.16	-.09	.41	.56	.23	.22	.35	.29	.46	.21
Sex			-.19	-.20	.21	.05	-.31	.18	.02	.06	-.15	-.12
Educ.				-.02	-.05	-.05	.16	.15	.06	.07	.15	.06
Add.					-.04	-.07	-.-1	-.08	-.09	-.01	-.01	.07
MS						.85	.57	.53	.02	.00	.17	.05
Type of Res.							.60	.45	.13	.10	.26	.05
No. of Dep.								.94	-.04	-.01	.14	.08
No. of Child.									-.05	.00	.12	.09
Yrs. Lived State										.85	.21	.07
Yrs. Lived County											.24	.03
Tenure Last Job												.09
Why left Last Job												1.00

TABLE 9

Rotated Factor Matrix

	Factor I	Factor II	Factor III	Factor IV	Factor V	Factor VI	Factor VII	h^2
Age	-.65	.18	.09	-.07	-.28	.24	.15	.651
Sex	.13	.48	-.26	.37	-.08	.23	.07	.522
Educ.	.02	-.03	.12	-.06	-.03	-.47	.05	.251
Address	.09	-.46	-.03	.04	-.05	.01	.05	.229
M.S.	-.64	-.09	.32	.42	-.05	.07	-.38	.855
Type of Residence	-.75	-.13	.25	.25	.00	.09	-.06	.849
No. of Depend.	-.34	-.04	.90	.10	-.08	-.14	.07	.964
No. of Children	-.24	.12	.89	.15	.04	-.14	.12	.935
Yrs. lived in State	-.06	-.06	.05	-.-2	-.03	-.01	.05	.831
Yrs. lived in Cty.	-.01	.06	.00	-.08	-.89	-.06	.02	.815
Tenure on Last Job	-.50	.12	.02	-.25	-.18	-.16	.16	.409
Reason for Leaving Last Job	-.02	-.04	.05	-.08	-.03	-.01	.31	.142
Tenure on This Job	-.40	.56	.12	-.01	-.10	.06	.06	.511

parents, having no dependents and little previous job experience. The factor labeled sexual mobility is significantly weighted with the sex of the employee and the distance he has to travel to the plant, and indicates that the long term employee is female, and lives nearby the factory.

The last column in Table 9 presents the communalities of the variables. It can be seen that 51 percent of the variance in variable 13 (length of tenure on present job) can be accounted for by the 7 factors isolated in the factor analysis. Further, 47.7 percent of the variance can be accounted for by the two highest loadings on this variable.

DISCUSSION

In general, the evidence seems to clearly indicate that the WAB technique does differentiate between long and short tenure unskilled laborers. In comparison with a 50-50 chance rate, the WAB technique is highly effective in correctly classifying long term and short term employees. The correlation between length of service and the individual's weighted application blank score was also highly significant. This result is particularly noteworthy when it is compared with the multiple regression correlation, and found to be slightly (but not significantly) higher. Apparently, the WAB is at least as efficient as the more statistically sophisticated technique, although it is possible that a curvilinear multiple regression analysis mayhhave yielded a more accurate prediction. This point is left for further study.

A comparison of the biographical items found to discriminate between long and short term employees in the Dunnette and Maetzold study (1957) and also in the present study, show certain similiarities and differences. Both studies agreed that typical long term employees lived within five miles of the factory, were married, and had more than 10 years of education. Age at the time of application was also found to be a differentiating item in both studies, although the specific ages for stable employees were different in each investigation. Dunnette and Maetzold found the ideal long

term employee was either young (under 25) or old (over 55), while in the present investigation it was found that the optimum age for long term employees was between 40 and 50 years and that young employees (under 20) were definite short tenure risks. Besides age, the two studies also disagreed on number of children; in the Dunnette and Maetzold study the long tenure employee had no children, while in the present study the long term employee had two or more. Four variables were also found to discriminate between the two groups of employees in the Dunnette and Maetzold investigation which were not found in the present study. They included height and weight, ownership of a telephone, and previous employment with the company.

In explaining some of the discrepancies between the two studies, it has been pointed out that Dunnette and Maetzold were dealing with a seasonal population which included housewives and high-school and college students. Thus it seems likely that this working force would generally be of a somewhat higher economic class and therefore have more of an access to a telephone. Also was mentioned, many of the season employees are students, either in high school or college, and since this work is available in the summer, when they are on vacation, it is not surprising that many have worked for the company before.

Thus, it appears that the present study does in effect give substantial support to Dunnette and Maetzold's conclusion that the WAB technique is effective in controlling job turnover for unskilled labor engaged in a variety of blue collar jobs.

To determine if the biographical items found to differentiate between the two groups of employees in the present study were limited only to this type of unskilled labor force, a comparison was made with a number of personal items England (1961) found useful in the prediction of job success with all types of production workers. In a survey of studies he found such biographical items as age, marital status, location of residence, education and tenure on previous job as important predictors of occupational success. It is noted that a very close similiarity exists between the biographical items found in the present study and those suggested by England as having generality with all types of production workers.

Therefore, it seems justifiable to summarize that the WAB is an effective instrument in predicting job tenure of unskilled laborers, and that the biographical items found useful in the prediction of this tenure are in many cases the same items which have been found useful in prediction of job success for other kinds of production workers.

An interesting result of the factor analysis is that there appear to be two patterns of biographical information which underlie the 12 discriminating variables. The first factor, lack of family responsibility, makes good intuitive sense since it would be expected that young people without a home or family to support would be most likely to quit any job which they did not feel was sufficiently self-rewarding. Conversely, an employee who was married, owned a house and had at least one dependent to support would, no doubt, give considerable thought to quitting a job. The second factor, sexual mobility, seems also to make intuitive sense, in that most women have less access to transportation than men, and therefore would be more likely to accept a position close to their homes. Also there would seem to be relatively few job openings for women with only a high school education or less, so that these women would be more apt to remain on a permanent job once they had secured it.

Implication for hiring then seem to dictate that the Oxford Pickle Company concentrate on an area within a radius of 5 miles from the plant and try to attract as many women as possible. Emphasis should also be placed on the amount of family responsibility an applicant has, and extreme caution should be exercised in hiring young and unmarried people.

Finally it must be pointed out that the WAB technique will not be helpful if the supply of applicants does not exceed the number of workers needed. Unless recruitment procedures are successful, the findings of this study may be limited to certain periods of the year, specifically late fall and winter. It is at these times that the supply of potential applicants exceeds the actual number of workers needed at the Oxford Pickle Company.

SUMMARY

The purpose of this study was to develop a Weighted Application Blank which would be useful in reducing job turnover among unskilled laborers. Application blanks of 150 unskilled laborers were separated into a weighting group and a holdout group, both composed of an equal number of long and short tenure employees. Application data for the long and short tenure employees of the weighting groups were compared. The differences between the two groups were weighted in accordance with the magnitude of the difference. Items having the same weight for each response category were discarded.

Twelve of the nineteen biographical items on the application blank do differentiate between long and short tenure employees. They indicate that the ideal ong term employee is between 40 and 50 years old, female, lives in his or her own home, lives within 5 miles of work, claims 1 dependent, has 2 or more children, has worked two years or more on last job, and left this job for other reasons than going back to school.

In order to establish a cut-off score, the weights of the personal items found to discriminate between long and short term employees in the weighting group were applied to members of the holdout group. Total scores for all

members of the holdout group were obtained by adding their respective weights. These total scores, converted to percentages, were compared for the long and short term employees to obtain the point (score) of greatest differentiation.

Using a cut-off score of 14 there were 72 percent correct classifications of short and long tenure employees. This percentage of total "hits" proved significantly different from chance (50:50 split).

When length of service (in months) and weighted application blank score for each individual were correlated for the holdout group, a significant product moment correlation (r=.45) was obtained.

Since the WAB technique does not take into account intercorrelations between the discriminating variables, an alternative procedure of weighting the items based upon the application of multiple regression technique was used. Predicted job tenure for each applicant in the holdout group was determined from an equation using the six variables which accounted for the greatest amount of variance in the equation. However, results of the correlation between predicted job tenure and actual job tenure turned out surprisingly low, although not significantly different from the correlation between WAB scores and job tenure.

A factor analysis of the discriminating variables turned up two main underlying patterns. One of these was called "lack of family responsibility" which indicated that the short term employee was young, single, living with his parents and having no dependents. The other factor, which was labeled "sexual mobility", indicated that long term employees were more often women who lived within a very few miles of the factory.

These positive results are not only of practical value, in that they illustrate the WAB technique can reduce turnover at the Oxford Pickle Company, but are also of theoretical significance since they support the conclusions derived in the Dunnette and Meatzold study (1955), using a "purer" sample of unskilled laborers.

Future research may give further consideration to (a) the low multiple regression correlation obtained between predicted job tenure and actual job tenure, taking into account the three possible reasons given in the present study, (b) the possibility of predicting other criteria (e.g. accidents or absenteeism) for these same unskilled laborers, and (c) the replication of this study in another one of the Oxford Pickle plants in order to determine the generalizability of the results.

REFERENCES

Adcock, C.J. Factorial Analysis for Non-Mathematicians. Cambridge University Press, 1954, 332.

Dixon, W.J. Biomedical Computer Programs, University of California, Los Angeles, Sept. 1965.

Dunnette, M.D. & Maetzold, J. Use of weighted application blank in hiring seasonal employees. Journal of Applied Psychology. 1955, 39, 308-309.

England, G. W. Development and Use of Weighted Application Blanks, Dubuque, Iowa.: Wm. C. Brown Co., 1961.

Fleishmann, E. A. & Berniger, J. One way to reduce office turnover. Personnel. 1960, 37, 63-69.

Fruchter, B. Introduction to Factor Analysis. N.Y.: Van Nostrand, 1954.

Goldsmith, D. B. The use of the personal history blank as a salesmanship test. Journal of Applied Psychology. 1922, 6, 146-155.

Kerr, W. A. & Martan, H. S. Prediction of job success from application blank. Journal of Applied Psychology. 1949, 33, 442-444.

Kirchner, W.J. and Dunnette, M.D. Applying weighted application blank techniques to a variety of office jobs. Journal of Applied Psychology. 1957, 41, 514-520.

Kriedt, P.H. & Gadel, M.S. Prediction of turnover among clerical workers. Journal of Applied Psychology. 1953, 37, 338-340.

Minor, F.J. The prediction of turnover of clerical employees. Personnel Psychology. 1958, 11, 393-402.

Mosel, J.N. Prediction of department store sales performance from personal data. Journaloof Applied Psychology. 1952, 36, 8-10.

Scholl, C.E. & Bellow, R.M. A method for reducing employee turnover. Personnel. 1952, 29, 234-236.

Scollay, R.W. Personal history items against a salary increase criterion. Personnel Psychology. 1956, 9, 325-335.

Soar, R.S. Personal history data as predictor of success in service station management, Journal of Applied Psychology. 1956, 40, 383.

Strong, E.J., Jr. An interest test for personnel managers. Journal of Personnel Research. 1926-27, 31, 615-616.

Tiffin, J. Parker, T. & Habersat, R.W. The analysis of personnel data in relation to turnover on a factory job. Journal of Applied Psychology. 1947, 31, 615-616.

APPLICATION FOR EMPLOYMENT

PERSONAL INFORMATION

DATE _____ SOCIAL SECURITY NUMBER _____

NAME _____ SEX _____
LAST FIRST MIDDLE

PRESENT ADDRESS _____
STREET CITY STATE

PERMANENT ADDRESS (IN U. S.) _____
STREET CITY STATE

PHONE NO. _____ OWN HOME _____ RENT _____ BOARD _____

HEIGHT _____ WEIGHT _____ COLOR OF HAIR _____ COLOR OF EYES _____

MARRIED _____ SINGLE _____ WIDOWED _____ DIVORCED _____ SEPARATED _____

NUMBER OF CHILDREN _____ DEPENDENTS OTHER THAN WIFE OR CHILDREN _____ CITIZEN OF U.S.A. YES ○ NO ○

IF RELATED TO ANYONE IN OUR EMPLOY, STATE NAME AND DEPARTMENT _____ REFERRED BY _____

EMPLOYMENT DESIRED

POSITION _____ DATE YOU CAN START _____ SALARY DESIRED _____

ARE YOU EMPLOYED NOW? _____ IF SO MAY WE INQUIRE OF YOUR PRESENT EMPLOYER? _____

EVER APPLIED TO THIS COMPANY BEFORE? _____ WHERE _____ WHEN _____

EDUCATION	NAME AND LOCATION OF SCHOOL	YEARS ATTENDED	DATE GRADUATED	SUBJECTS STUDIED
GRAMMAR SCHOOL				
HIGH SCHOOL				
COLLEGE				
TRADE, BUSINESS OR CORRESPONDENCE SCHOOL				

SUBJECTS OF SPECIAL STUDY OR RESEARCH WORK _____

WHAT FOREIGN LANGUAGES DO YOU SPEAK FLUENTLY? _____ READ _____ WRITE _____

U. S. MILITARY OR NAVAL SERVICE _____ RANK _____ PRESENT MEMBERSHIP IN NATIONAL GUARD OR RESERVES _____

ACTIVITIES OTHER THAN RELIGIOUS (CIVIC, ATHLETIC, FRATERNAL, ETC.) _____

EXCLUDE ORGANIZATIONS, THE NAME OR CHARACTER OF WHICH INDICATES THE RACE, CREED, COLOR OR NATIONAL ORIGIN OF IT'S MEMBERS.

(CONTINUED ON OTHER SIDE)

FORMER EMPLOYERS (LIST BELOW LAST FOUR EMPLOYERS, STARTING WITH THE LAST ONE FIRST)

DATE MONTH AND YEAR	NAME AND ADDRESS OF EMPLOYER	SALARY	POSITION	REASON FOR LEAVING
FROM TO				
FROM TO				
FROM TO				
FROM TO				

REFERENCES: GIVE BELOW THE NAMES OF THREE PERSONS NOT RELATED TO YOU, WHOM YOU HAVE KNOWN AT LEAST ONE YEAR

NAME	ADDRESS	BUSINESS	YEARS ACQUAINTED
1			
2			
3			

PHYSICAL RECORD:

LIST ANY PHYSICAL DEFECTS

WERE YOU EVER INJURED? GIVE DETAILS

HAVE YOU ANY DEFECTS IN HEARING? IN VISION? IN SPEECH?

IN CASE OF EMERGENCY NOTIFY

NAME ADDRESS PHONE NO.

I AUTHORIZE INVESTIGATION OF ALL STATEMENTS CONTAINED IN THIS APPLICATION. I UNDERSTAND THAT MISREPRESENTATION OR OMISSION OF FACTS CALLED FOR IS CAUSE FOR DISMISSAL. FURTHER, I UNDERSTAND AND AGREE THAT MY EMPLOYMENT IS FOR NO DEFINITE PERIOD AND MAY, REGARDLESS OF THE DATE OF PAYMENT OF MY WAGES AND SALARY, BE TERMINATED AT ANY TIME WITHOUT ANY PREVIOUS NOTICE.

DATE SIGNATURE

DO NOT WRITE BELOW THIS LINE

INTERVIEWED BY DATE

REMARKS:

NEATNESS		CHARACTER	
PERSONALITY		ABILITY	

HIRED FOR DEPT. POSITION WILL REPORT SALARY WAGES

APPROVED: 1. EMPLOYMENT MANAGER 2. DEPT. HEAD 3. GENERAL MANAGER

APPENDIX B

Part A

(To be used when both per cents are between 8 and 92)

Diff. in Per Cents	Net Weight
69	27
68	26
67	25
66	24
65	23
64	22
62-63	21
61	20
60	19
58-59	18
56-57	17
54-55	16
52-53	15
50-51	14
48-49	13
45-47	12
42-44	11
39-41	10
36-38	9
33-35	8
29-32	7
24-28	6
21-23	5
16-20	4
12-15	3
8-11	2
3-7	1
0-2	0

Part B

(To be used when one per cent is between 3 and 7, or 93 and 97)

Diff. in Per Cents	Net Weight
69	27
68	26
67	25
66	24
64-65	23
63	22
62	21
60-61	20
58-59	19
57	18
55-56	17
53-54	16
50-52	15
48-49	14
45-47	13
42-44	12
39-41	11
35-38	10
31-34	9
27-30	8
23-26	7
19-22	6
15-18	5
11-14	4
7-10	3
4-6	2
2-3	1
0-1	0

Part C

(To be used when one per cent is between 0 and 2, or 98 and 100)

Diff. in Per Cents	Net Weight
69	28
68	27
67	26
66	25
65	24
63-64	23
62	22
60-61	21
59	20
57-58	19
55-56	18
53-54	17
51-52	16
49-50	15
46-48	14
43-45	13
40-42	12
36-39	11
32-35	10
28-31	9
24-27	8
19-23	7
15-18	6
11-14	5
7-10	4
4-6	3
2-3	2
1	1
0	0

APPENDIX C

Table of Assigned Weights Derived From Net Weights

Net Weight	Assigned Weight
-4 or less	0
3,2,1,0 or -1,-2,-3	1
4 or more	2

APPENDIX D

Personal Data of Subjects in the Weighting Group - Short Tenure

Name	Age	Sex	Ht.	Wt.	Educ.	Address	MS	Type of Res.	Telep.	Dep.	Previous Occup.	No. of Child.	Lived State	Lived County	Tenure Last Job	No. of Jobs Listed	Reason for Quitting	Worked for Co. before	References
TL	18	M	5'8"	130	8	2	S	WP	No	0	Sheet Wkr.	0	NA	NA	NA	1	Job Corps	No	0
NC	17	F	5'4"	125	6	1	S	WP	Yes	0	Labor	0	17	17	NA	1	NA	No	0
LH	36	M	5'10"	150	12	8	M	H	Yes	2	Labor	1	17	5	NA	1	No trans.	No	0
JR	28	M	5'11"	210	10	11	M	H	Yes	5	Farmer	4	28	28	NA	1	Sold out	No	0
RP	20	M	5'7"	170	17	10	S	R	Yes	0	Labor	0	9 mo.	9 mo.	Summer	2	Summer	No	0
FK	32	M	5'5"	150	12	10	D	R	No	1	Operator	0	NA	NA	2 yr.	1	Closed	No	0
WY	38	M	5'2"	185	8	8	S	R	Yes	0	Driver	0	NA	NA	2 yr.	2	Co. sold out	No	0
AV	18	M	5'10"	145	11	8	S	WP	No	0	Helper	0	18	18	1 mo.	3	NA	No	0
HF	17	M	5'4"	151	10	14	S	WP	No	0	Labor	0	12	3 1/2	NA	1	NA	No	0
FH	20	M	6'	185	8	11	S	R	Yes	0	Holder	0	15	15	2 mo.	1	Quit	No	0
LH	61	M	5'8"	142	10	11	W	R	NA	0	Labor	0	61	NA	NA	1	Quit	No	0
RR	19	M	5'6"	140	10	20	S	R	Yes	0	Labor	0	5	61	9	1	Lay off	No	0
LJ	18	F	5'	118	122	111	M	WP	Yes	0	Striper	0	18	18	2 mo.	1	Marry	No	0
GH	27	F	5'4"	116	12	11	S	R	Yes	0	Labor	0	0	0	2	1	Illness	No	0
JK	33	M	5'7"	145	8	14	S	WP	Yes	0	Labor	0	33	NA	3	5	Lay off	No	0
MC	19	M	6'3"	215	13	10	S	WP	Yes	0	Sales	0	19	3	2 mo.	1	Another job	No	1
SH	33	F	5'8"	185	11	14	M	H	Yes	0	Packer	NA	33	4	2	1	Lay off	No	0
RC	18	M	5'8"	150	11	8	S	WP	Yes	0	Labor	0	18	18	NA	1	Lay off	No	0
NB	16	F	5'4"	122	9	11	S	WP	Yes	0	Farm	0	16	16	Summer	1	School	No	0
RL	19	M	6'5"	185	12	1	S	WP	Yes	0	Labor	0	19	19	NA	2	Lay off	No	0
JS	24	M	5'10"	150	12	8	M	H	Yes	2	Labor	1	24	24	2	3	Job Finished	No	0
JD	18	M	6'1"	165	13	8	S	WP	Yes	0	Kitch. Help	0	18	3	1	1	School	No	0
RW	48	M	5'8"	160	14	8	M	H	No	3	Painter	2	44	44	Self Emp.	1	NA	No	0
PK	17	F	5'3"	104	11	1	S	WP	Yes	0	Reception.	0	17	17	2 mo.	2	School	No	0
RL	19	M	5'6"	135	10	8	S	WP	Yes	0	Labor	0	19	19	NA	2	Lay off	No	0

APPENDIX D

Personal Data of Subjects in the Weighting Group - Long Tenure

Name	Age	Sex	Ht.	Wt.	Educ.	Address	MS	Type of Res.	Telep.	Dep.	Previous Occup.	No. of Child.	Lived State	Lived County	Tenure Last Job	No. of Jobs Listed	Reason for Quitting	Worked for Co. before	References
MR	23	M	6'2"	220	10	11	M	OH	Yes	2	driver	1	NA	NA	3 yr.	2	NA	No	0
WS	47	F	5'6"	125	NA	1	M	OH	Yes	0	operator	0	NA	NA	1	1	NA	No	0
RS	39	F	5'4"	148	9	1	M	OH	Yes	0	Labor	NA	NA	NA	5	1	Lay off	No	3
JL	40	F	5'2"	112	11	1	M	OH	Yes	4	NA	3	40	40	NA	1	NA	No	0
AP	48	M	5'11"	160	10	1	M	OH	Yes	5	Labor	4	NA	NA	12	2	Lack work	No	1
MG	22	M	6'1"	174	11	10	M	OH	Yes	4	Labor	3	20	6	2	3	Pay	No	0
DB	41	F	5'6"	145	12	1	M	OH	Yes	0	Clerk	NA	41	41	5	1	Work	No	0
PT	24	M	5'11"	140	13	1	M	OH	Yes	4	NA	3	NA	NA	NA	3	NA	No	0
MK	18	F	5'5"	115	12	8	S	R	Yes	0	Waitress	0	12	12	1 mo.	3	Moved	No	3
BM	22	F	5'6"	155	8	8	M	OH	No	1	Maid	1	NA	NA	1	1	Operation	No	1
RW	29	M	5'10"	155	12	12	M	OH	Yes	5	Driver	4	29	29	2	2	NA	No	0
RF	24	M	5'11"	140	12	10	M	OH	Yes	3	Labor	2	22	20	1	1	Out of bus.	No	0
JM	16	F	5'	96	12	2	S	WP	Yes	0	Labor	0	16	16	NA	1	Quit	No	0
SB	39	F	5'2"	139	7	2	M	OH	No	0	Labor	NA	39	39	NA	NA	NA	No	0
AM	21	M	5'8"	130	12	11	S	WP	Yes	0	Stock Boy	0	21	21	2 wks.	1	Lay off	No	0
WS	50	M	5'4"	210	9	8	M	OH	No	1	Labor	0	50	NA	NA	2	wk ran out	No	0
OW	20	F	5'7"	145	12	8	M	OH	No	2	Clerk	2	20	20	2 yr.	1	Have baby	No	0
KR	16	F	NA	NA	10	2	S	WP	Yes	0	Labor	0	16	16	NA	1	NA	No	0
AB	31	F	5'	85	12	8	S	R	Yes	0	Office Work	0	31	31	6	5	Bad Conditions	No	0
JD	41	M	5'2"	158	12	8	M	OH	Yes	3	Own Bus.	2	41	41	17	11	Sold out	No	0
FG	61	M	5'7"	180	12	2	M	OH	No	2	Cop	4	61	61	4 mo.	1	Work ended	No	0
PJ	25	M	6'	175	12	10	M	OH	Yes	1	Labor	0	25	NA	4 yr.	2	Moved	No	0

APPENDIX D

Personal Data of Subjects in the Weighting Group - Long Tenure

Name	Age	Sex	Ht.	Wt.	Educ.	Address	MS	Type of Res.	Telep.	Dep.	Previous Occup.	No. of Child.	Lived State	Lived County	Tenure Last Job	No. of Jobs Listed	Reason for Quitting	Worked for Co. before	References
LC	20	M	5'11"	160	10	2	M	OH	Yes	3	Labor	2	20	20	NA	2	Lay off	No	0
FS	45	M	6'	190	12	8	M	OH	Yes	1	Labor	0	2	2	5 yr.	2	Work slack	No	0
SY	18	F	NA	NA	12	8	M	OH	Yes	0	Sec.	0	18	18	6 mo.	1	Lay off	nNo	0
JC	18	M	5'10"	143	11	11	S	WP	Yes	0	Labor	0	18	18	2 mo.	1	Lay off	No	0
MO	34	M	5'8"	165	12	8	M	OH	Yes	4	Labor	3	NA	NA	6 yr.	1	NA	No	0
BD	16	M	5'11"	150	10	8	M	OH	Yes	4	Labor	0	18	18	2 mo.	1	No work	No	1
SD	45	M	5'6"	150	12	8	S	OH	Yes	0	Labor	0	45	45	11 yr.	1	Sold Bus.	No	0
PK	19	M	6'1"	185	12	8	S	WP	Yes	0	Farmer	0	19	19	Farm	1	NA	No	0
JF	54	F	5'2"	178	NA	2	M	OH	No	1	Labor	1	NA	NA	NA	3	NA	No	0
RP	42	M	5'9"	160	8	15	M	OH	Yes	2	Driver	1	NA	NA	3 yr.	2	NA	No	0
EH	35	M	5'8"	140	8	10	M	OH	Yes	2	Labor	1	NA	NA	NA	1	Wk. for self	No	0
SM	34	M	6'	160	8	11	M	OH]	Yes	3	Labor	2	NA	NA	4 yr.	3	Lay off	Yes	3
RM	25	F	5'5"	110	12	8	M	OH	Yes	0	Labor	NA	NA	NA	1Amo.	2	Married	No	0
IC	43	F	5'4"	160	12	15	M	OH	Yes	1	Labor	1	43	43	1 yr.	4	Burned out	No	0
RT	24	M	5'7"	155	12	8	S	WP	Yes	0	Labor	0	21	21	4 days	5	Temporary	No	2
WD	19	M	5'6"	135	7	3	M	OH	No	1	Labor	0	19	19	1 yr.	1	No pay	No	0
SD	52	M	5'5"	150	12	8	S	OH	Yes	0	Labor	0	45	45	11 yr.	1	Sold out	No	0
BM	43	F	5'7"	129	12	2	M	OH	Yes	0	Sec.	2	20	8	2 yr.	1	Pregnant	No	0
PB	30	M	5'11"	180	12	10	S	WP	Yes	0	Labor	0	NA	NA	1 yr.	1	Lay off	No	0
GK	50	F	5'3"	200	NA	15	M	OH	Yes	0	Labor	NA	50	50	1 yr.	1	Lay off	No	0
WB	30	M	6'	190	12	16	M	WP	Yes	2	Driver	1	30	30	2 yr.	3	Better job	No	0
SB	17	F	5'3"	121	10	8	M	OH	No	0	None	0	17	17	NA	1	NA	No	0
PB	31	F	5'2"	115	11	2	M	OH	Yes	1	Housewife	2	NA	NA	1 Yr.	2	No work	No	0
SM	59	F	5'7"	138	10	2	M	OH	Yes	0	Clerk	NA	28	NA	5 yr.	2	Lay off	No	0
RM	42	M	NA	NA	12	8	M	OH	Yes	4	Labor	3	NA	NA	5 yr.	2	NA	No	0
DN	21	M	5'8"	190	12	8	M	WP	Yes	1	Labor	0	21	21	NA	1	Air Force	No	0
KE	19	F	5'3"	137	12	10	S	WP	Yes	0	Labor	0	19	19	1 yr.	2	Sick	No	0
RS R	19	M	6'6"	160	12	2	S	WP	Yes	0	Labor	0	NA	NA	NA	1	No work	No	0

APPENDIX D

Personal Data of Subjects in the Weighting Group - Short Tenure

Name	Age	Sex	Ht.	Wt.	Educ.	Address	MS	Type of Res.	Telep.	Dep.	Previous Occup	No. of Child.	Lived State	Lived County	Tenure Last Job	No. of Jobs Listed	Reason for Quitting	Worked for Co. before	References
RL	39	M	5'6"	150	12	8	M	H	Yes	2	Labor	1	NA	NA	Still emp.	5	NA	No	0
GK	41	M	5'11"	165	8	10	M	H	No	2	Printer	1	4	NA	4	1	Seasonal	No	0
EG	33	M	5'8"	145	15	1	D	R	No	3	Sales	2	NA	NA	3 mo.	1	Closer home	No	0
JP	29	M	5'9"	170	12	11	S	WP	Yes	0	Labor	0	29	29	9 mo.	1	Travel	No	3
MP	54	F	5'8"	125	11	11	M	H	Yes	0	Clerk	0	34	34	Seasonal	2	No work	No	3
WS	17	M	5'11"	145	9	8	S	R	No	0	Bellboy	0	34	34	Seasonal	2	lack of work	No	0
EC	18	M	5'10"	150	11	1	S	R	Yes	0	Farm	0	18	15	2 wks	1	Seasonal	No	0
GC	18	M	5'10"	170	8	14	S	WP	Yes	0	Labor	00	18	18	4 mo.	1	Moved	No	0
GK	18	M	5'10"	130	9	8	S	WP	No	0	Packing	0	18	18	2 wks.	1	Uncle died	No	0
SG	19	F	5'2"	106	6	8	D	R	Yes	0	Floor girl	0	19	11	2 wks	1	Layed off	No	0
MG	20	F	5'3"	110	13	8	S	WP	Yes	0	K P	0	20	20	6 mo.	2	Conflict	No	0
LB	36	M	6	204	12	8	M	WP	No	1	Labor	1	18	6	6 mo.	1	Family	No	0
DE	20	M	5'5"	160	8	14	S	WP	No	0	Logging	0	20	20	NA	1	Layoff	No	0
AG	25	M	5'9"	145	12	11	M	OH	Yes	1	Sales	1	25	17	1 yr.	4	Air Force	No	0
AM	42	M	5'8"	188	14	2	S	OH	No	0	Clerk	0	42	42	12 yr.	2	Lack of work	No	0
RS	16	M	5'10"	160	9	0	S	WP	Yes	0	Farmer	0	16	16	NA	1	School	No	0
TL	23	M	6'3"	195	8	11	M	OH	Yes	5	Labor	4	27	26	1 mo.	2	Lay off	No	0
AW	24	M	5'6"	150	9	8	M	OH	Yes	2	Labor	1	24	24	NA	1	Lack of work	No	0
JM	27	M	5'8"	195	10	10	M	WP	Yes	5	Labor	4	27	26	1 mo.	2	Work change	No	0
JF	19	F	5'1"	106	15	8	M	R	No	1	Bkkeeper	1	1	1	1 yr.	1	Marry	No	0
GD	37	F	5'6"	105	11	10	M	OH	Yes	0	Labor	0	NA	NA	2 yr.	1	Plant Relocated	No	6
AW	21	M	6'2"	180	10	8	S	R	Yes	0	Miller	0	21	21	1 mo.	1	Lay off	No	0
EW	17	F	5'3"	145	9	10	S	WP	Yes	0	Aid	0	17	17	1 mo.	1	More pay	No	0
KH	16	M	5'10:	140	10	8	S	WP	Yes	0	Labor	0	16	16	2 mo.	1	School	No	0
KW	19	F	5'4"	111	12	8	S	WP	Yes	0	Carhop	0	19	19	2 yrs.	3	Quit	No	0

APPENDIX D

Personal Data of Subjects in the Holdout Group - Short Tenure

Name	Age	Sex	Educ.	Add.	Marital Status	Res.	Dep.	No. of Child.	Years State	Years County	Tenure Last Job	Why left last job
RB	17	M	11	8	S	R	0	0	17	17	NA	Vacation
RB	18	F	12	8	S	WP	0	0	18	15	Still Emp.	NA
LC	43	M	9	11	M	OH	1	0	40	40	Still Emp.	NA
JC	18	F	13	8	S	R	0	0	26 wk	26 wk	6 mo.	No train.
DC	18	M	12	8	S	WP	0	0	18	18	2 yr.	Sold out
JE	18	M	13	8	S	WP	0	0	18	18	3 mo.	Lay off
GE	22	F	12	16	M	OH	o	2	NA	NA	3 yr.	No baby sitter
JL	19	14	12	2	S	WP	0	0	12	12	4 mo.	No Work
PM	25	M	12	8	0	WP	2	2	25	25	NA	Army
FM	40	F	10	8	M	OH	1	1	NA	NA	Still Emp.	NA
CM	21	M	11	8	S	WP	0	0	21	21	1 mo.	Lay off
JP	29	M	12	10	S	WP	0	0	29	29	9 mo.	Travel
AP	19	F	13	2	S	WP	0	0	19	19	1 mo.	School
GP	20	M	11	8	S	WP	0	0	20	20	NA	NA
CP	44	M	4	9	M	OH	1	NA	4	4	2	Closed
JR	18	F	12	2	S	R	O	O	6	NA	2 yr.	Part time
ER	49	M	8	8	M	OH	2	1	4	4	8 mo.	No orders
RR	22	F	12	1	S	WP	0	0	22	22	2 yr.	Lay off
MR	46	F	11	8	W	OH	1	1	7 mo.	7 mo.	3 mo.	No work
SS	21	F	12	8	S	R	0	0	2 mo.	2 mo.	1 mo.	Better job
FS	19	M	10	8	S	WP	0	0	1 yr.	1 yr.	NA	Better job
FS	22	M	12	10	S	WP	0	0	21	21	2 mo.	Lay off
SS	18	F	12	12	S	R	O	O	18	18	2 mo.	School
RS	22	M	10	8	M	OH	2	1	NA	NA	NA	Other Emp.
JN	23	M	11	10	M	OH	1	0	NA	NA	3 mo.	Lay off

APPENDIX D

Personal Data of Subjects in the Holdout Group - Long Tenure

Name	Age	Sex	Educ.	Add.	Marital Status	Res.	Dep.	No. of Child.	Years State	Years County	Tenure Last Job	Why left last job
DB	26	M	12	12	M	OH	4	3	28	28	1	Lay off
RC	23	M	8	8	M	OH	3	2	NA	NA	NA	NA
GC	58	F	12	8	O	OH	1	1	36	25	NA	Lay off
CD	24	F	12	8	S	R	0	0	24	1.5	9 mo.	Lay off
DD	49	M	12	8	M	OH	0	2	NA	NA	2 yr.	Family
CE	20	F	11	8	M	OH	0	2	NA	NA	4 yr.	Personal
EF	52	M	11	8	M	R	3	2	NA	NA	23 yr.	Retired
DG	52	M	7	14	M	OH	8	7	15	NA	6 mo.	Lay off
JH	20	F	12	10	M	OH	0	1	20	20	11/2	Pregnant
AH	16	F	10	8	S	WP	0	0	16	16	NA	NA
LB	25	F	12	8	M	OH	1	1	35	35	2 yr.	Moved
EG	22	M	12	2	S	WP	0	0	22	22	2 yr.	Better job
LK	57	M	10	8	M	OH	1	0	20	12	1 yr.	Lay off
JK	48	M	7	8	M	OH	3	2	48	48	NA	Sold shop
LP	40	M	12	10	M	OH	2	1	40	NA	NA	NA
RP	38	M	11	8	M	OH	1	0	6	4	NA	Seasonal
IS	38	F	12	2	M	OH	0	NA	NA	NA	1 yr.	Join husb.
EP	23	M	10	2	M	OH	2	1	NA	NA	1 yr.	Betterment
AG	28	M	12	2	M	OH	2	1	NA	NA	1 yr.	NA
RM	19	M	12	8	S	WP	0	0	NA	NA	NA	Service
SR	31	F	8	2	M	OH	2	2	NA	NA	8	Lay off
EM	31	M	NA	10	M	OH	2	1	NA	NA	NA	NA
CA	18	F	12	8	M	OH	0	0	18	18	2 yr.	Closed
KH	18	M	NA	12	S	WP	0	0	18	18	1 mo.	No work
SM	34	M	8	10	M	OH	3	2	NA	NA	25 yr.	Lay off

APPENDIX E

Differential Responses for Short and Long Tenure Weighting Groups

Response Category Column: 1	Grp.I Long Tenure 2	Grp.II Short Tenure 3	Grp.I Long Tenure 4	Grp.II Short Tenure 5	Col.4 Minus Col.5 6	Net Wght. 7	Assigned Weight 8
Age							
Unver 20	13	26	26%	52%	-26%	-6	0
21-30	13	10	26%	20%	6%	1	1
31-40	7	10	14%	20%	-6%	-1	1
41-50	13	3	26%	6%	20%	6	2
Over 50	4	1	8%	2%	6%	3	1
No Ans.	0	0					
	50	50					
Sex							
Male	29	27	58%	74%	-16%	-4	0
Female	21	13	42%	26%	16%	4	2
	50	50					
Education							
8th or less	6	10	12%	20%	-8%	-2	1
9	2	6	4%	12%	-8%	-3	1
10	7	8	14%	16%	-2%	0	1
11	4	7	8%	14%	-6%	1	1
12	27	11	56%	22%	34%	8	2
More than 12	1	8	2%	16%	-14%	-5	0
No Ans.	3	0	6%	0	6%	3	1
	50	50					
Marital Status							
Single	14	31	28%	62%	-14%	-8	0
Married	36	16	72%	32%	40%	10	2
Divorced	0	2	0	4%	-4%	3	1
Widow(er)	0	1	0	2%	-2%	-2	1
	50	50					
Telephone							
Yes	42	36	84%	72%	12%	3	1
No	8	14	16%	28%	-12%	-3	1
	50	50					

APPENDIX E (Continued)

Differential Responses for
Short and Long Tenure Weighting Groups

Response Category Column: 1	Grp.I Long Tenure 2	Grp.II Short Tenure 3	Grp.I Long Tenure 4	Grp.II Short Tenure 5	Col.4 Minus Col.5 6	Net Wght. 7	Assigned Weight 8
Address							
5 miles or less	18	8	36%	16%	20%	4	2
5-10 mi.	18	28	26%	56%	-20%	-4	0
10-20 mi.	11	13	22%	26%	-4%	-1	1
20 or more	3	1	6%	2%	4%	1	1
	50	50					
Residence							
Own home	36	11	72%	22%	56%	14	2
Live with Parents	12	24	24%	48%	-24%	-6	0
Room	2	15	4%	30%	-26%	-7	0
	50	50	100%	100%			
Dependents							
None	24	36	48%	72%	-24%	-6	0
One	9	3	18%	6%	12%	4	2
Two or more	17	11	34%	22%	12%	3	1
No Ans.	0	0	0%	0			
	50	50	100%	100%			
Tenure on Last Job							
6 months or less	7	20	14%	40%	-26%	-6	0
6 mo.-1 yr.	1	3	2%	6%	-4%	-2	1
1-2 yrs.	10	9	20%	18%	2%	1	1
More than 2 yr.	20	4	40%	8%	32%	7	2
No Ans.	12	14	24%	28%	-4%	1	1
	50	50	100%	100%			

APPENDIX E (Continued)

Differential Responses for
Short and Long Tenure Weighting Groups

Response Category Column: 1	Grp. I Long Tenure 2	Grp.II Short Tenure 3	Grp.I Long Tenure 4	Grp.II Short Tenure 5	Col.4 Minus Col.5 6	Net Wght. 7	Assigned Weight 8
If worked for the company before							
Yes	1	1	2%	2	0%	0	1
No	49	49	98%	98%	0%	0	1
	50	50					
Number of Children							
None	22	35	44%	70%	-26%	-6	0
One	8	9	16%	18%	-2%	0	1
Two or more	14	4	28%	8%	20%	4	2
No Ans.	6	2	12%	4%	8%	3	1
	50	50					
Height							
5'-5'6"	20	17	43%	34%	9%	2	1
5'7"	5	3	11%	6%	5%	2	1
5'8"	4	9	9%	18%	-9%	-2	1
5'9"	2	2	4%	4%	0	0	1
5'10"-6'	12	13	26%	26%	0	0	1
Over 6'	4	5	9%	10%	-1	0	1
	47	50					
Weight							
100-125	8	11	17%	22%	-4%	-1	1
125-150	15	18	32%	38%	-6%	1	1
150-175	13	9	28%	18%	10%	2	1
175-200	9	8	19%	10%	3%	1	1
over 200	2	3	4%	6%	-2%	1	1
	47	50					

APPENDIX E (Continued)

Differential Responses for
Short and Long Tenure Weighting Groups

Response Category Column: 1	Grp.I Long Tenure 2	Grp.II Short Tenure 3	Grp.I Long Tenure 4	Grp.II Short Tenure 5	Col.4 minus Col.5 6	Net Wght. 7	Assigned Weight 8
Prev. Occup.							
Labor	32	29	64%	58%	6%	1	4
Clerical or sales	6	8	12%	16%	-4%	-1	1
Farm	1	3	12%	6%	-4%	-3	1
Driver	4	1	8%	2%	6%	3	1
Other	7	9	14%	18%	-4%	1	1
	50	50					
No. of Ref.							
0	41	44	82%	88%	-6%	-1	1
1	3	2	6%	4%	2%	1	1
2	3	1	6%	2%	4%	3	1
3 or more	3	3	6%	6%	0	0	1
	50	50					
No. of Previous Jobs listed							
0	1	0	2%	0	2%	3	1
1	27	34	54%	68%	-19%	-3	1
2	13	10	26%	20%	6%	1	1
3	6	3	12%	6%	6%	2	1
4 or more	3	3	6%	6%	0%	0	1
	50	50					
Length of time lived in State							
5 yrs or less	1	6	2%	12%	-10%	-4	0
6-10 yrs.	0	0	0	0	0		
11-15 yrs.	1	2	2%	4%	-2%	-2	1
16-20 yrs.	13	22	26%	44%	-18%	-4	0
over 29	19	13	38%	26%	12%	3	1
No ans.	16	7	32%	14%	18%	4	2
	50	50					

APPENDIX E (Continued)

Differential Responses for
Short and Long Tenure Weighting Groups

Response Category Column: 1	Grp.I Long Tenure 2	Grp.II Short Tenure 3	Grp.I Long Tenure 4	Grp.II Short Tenure 5	Col.4 minus Col.5 6	Net Wght. 7	Assigned Weight 8
Length of time lived in County							
5 yrs. or less	1	9	2%	18%	-16%	-6	0
6-10 yrs.	2	1	4%	2%	2%	2	1
11-15 yrs.	1	3	2%	6%	-4%	-3	2
16-20 yrs.	11	17	22%	34%	-16%	-4	0
over 20 yrs.	16	10	32%	20%	12%	3	1
No Ans.	19	10	38%	20%	18%	4	2
	50	50	100%	100%			
Reason for leaving last job							
Lay off	17	17	34%	34%	0	0	1
School	0	5	0	10%	-10%	-4	0
Quit	1	4	2%	8%	-6%	-3	1
Sold out	4	3	8%	6%	22%	1	1
Others	15	16	30%	32%	-2%	1	1
No Ans.	13	5	26%	10%	16%	4	2